

## CLAIMS

What is claimed is:

1. A system for automatic object classification comprising:  
means for applying a plurality of binary rules to an object, wherein any of said binary rules is operative to classify said object to one of a pair of classes; and  
means for determining to which of said classes said object is classified the greatest number of times subsequent to the application of said binary rules.
2. A system according to claim 1 and further comprising means for automatically generating said binary rules.
3. A system according to claim 2 and further comprising a learning set having a plurality of said objects, wherein each of said objects in said learning set is pre-classified as belonging to one of said classes, and wherein said means for automatically generating is operative to generate said binary rules using said learning set.
4. A system according to claim 2 wherein said means for automatically generating is operative to generate using supervised learning.
5. A system according to claim 1 wherein:  
each of said binary rules includes a first part and a second part,  
said means for determining is operative to calculate using said first part a degree of belonging of said object to one of said classes in said class pair,  
said means for determining is operative to calculate using said second part a degree of belonging of said object to the other of said classes in said class pair, and  
said means for applying is operative to select one of said classes in said class pairs to which said degree of belonging of said object is greater.
6. A system according to claim 5 wherein each of said parts comprises at least one fuzzy logic formula including at least one named predicate related to a numerical

characteristic of one of said objects, and wherein said means for determining is operative to calculate said degrees of belonging using said fuzzy-logic formulae.

7. A system according to claim 1 wherein said objects are images.
8. A system according to claim 1 wherein said objects are semiconductor defect images and wherein said classes describe defect classes for application in semiconductor production.
9. A method for automatic object classification comprising:  
applying a plurality of binary rules to an object, wherein any of said binary rules is operative to classify said object to one of a pair of a plurality of classes; and  
determining to which of said classes said object is classified the greatest number of times subsequent to the application of said binary rules.
10. A method according to claim 9 and further comprising:  
pre-classifying a plurality of objects in a learning set as belonging to one of said classes; and  
automatically generating said binary rules using said learning set, wherein any of said binary rules of any of said pairs of classes is generated using any of said objects in said learning set that are pre-classified as belonging to said pair of classes.
11. A method according to claim 10 wherein said automatically generating step comprises generating using supervised learning.
12. A method according to claim 9 wherein:  
said determining step comprises calculating a degree of belonging of said object to one of said classes in said class pair using a first part of each of said binary rules,

said determining step comprises calculating a degree of belonging of said object to the other of said classes in said class pair using a second part of each of said binary rules, and

said applying step comprises selecting one of said classes in said class pairs to which said degree of belonging of said object is greater.

13. A method according to claim 12 wherein said determining step comprises calculating said degrees of belonging using a fuzzy-logic formula included in each of said parts and including at least one named predicate related to a numerical characteristic of one of said objects.